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Mission Statement
The Department of Health and Mental Hygiene Information Technology Support Division provides responsive support of all systems, networks, and data access for the state of Maryland health facilities and administrations.

1 Introduction

The Department of Health and Mental Hygiene (DHMH) provides services and support to all DHMH Administrations, Local Health Departments, Boards and Commissions, and Hospital Facilities. This plan is designed to assist DHMH in determining its telecommunications objectives for the future and to determine the most efficient approach to meeting these objectives. This plan documents the current infrastructure and provides insight into the tasks that must be accomplished to meet the objectives and goals as they are defined.

1.1 DHMH Organization

The DHMH Agency is organized into four major areas:

- Executive Operations and Quality Management Programs
- Operations
- Health Care Financing
- Public Health Services

These areas are further delineated by administrations including such administrations as Community and Public Health Administration (CPHA), Developmental Disabilities Administration (DDA), Mental Hygiene Administration (MHA) etc... DHMH also supports all Local Health Departments (LHDs) and State Hospital Centers. Currently the DHMH has over 60 Administrations with staff located through out all counties in the State of Maryland. Within the four major functional groups the DHMH IT staff supports:

- Over 50 Boards, Commissions, and Administrations; located at
- 24 Local Health Departments;
- 4 Regional Centers;
- 17 Hospital Centers; and
- 6 Additional DHMH facilities; with,
- 64 Broadband circuits; across
- 4 LATAs

1.2 Current Telecommunications Infrastructure

The DHMH telecommunications infrastructure is comprised of Local Area Networks (LAN) at each of the facilities and a Wide Area Network (WAN) that provides data access to the DHMH Headquarters at 201 W. Preston Street, Baltimore Maryland. The facility LANs are currently Novell IPX with GroupWise providing Email services. At this time the WAN is designed in a Hub and Spoke configuration. The WAN traffic is primarily TCP/IP and FTP traffic. The LANs are used primarily to support daily administrative functions and to provide user access to DHMH

applications.   The WAN provides access to financial data, health related applications, the Internet, and Email via DHMH headquarters.

1.3   IT Staff Telecommunications Support

The DHMH IT staff supports multiple projects, administrations, facilities, Boards and Commissions, and Local Health Departments throughout the state. Most of the facilities have a local IT staff that supports the LANs and the systems located at the facility. The larger administrations also have a technical staff to support their specific projects and systems at the facilities. The core DHMH IT staff provides support to the users and facilities on an as-needed basis. In some instances the only requirement is to provide and support the broadband circuit that provides access to the DHMH Headquarter facilities and applications. In other instances the staff must provide full support for all telecommunications equipment, and facility LANs.

1.4   DHMH Headquarters LAN

The DHMH LAN includes routers, switches, servers, mid-range computers, firewalls, and gateways to provide access to Annapolis Data Center's mainframe, etc. The DHMH headquarters LAN is the hub for most of users and facilities. It provides access to numerous applications including as an example:

- HMIS- Hospital Management Information Systems
- FMIS- Financial Management Information Systems
- MMIS- Medicaid Management Information System
- MERSS – Maryland Electronic Reporting Surveillance System

Currently the Internet connectivity for DHMH provides no redundancy and minimal bandwidth to support the users. Figure 1-LAN Flat Network Example on the following page provides an example of a flat network similar to what is currently implemented at DHMH headquarters.

DHMH is currently in the process of redesigning the LAN at 201 W. Preston. This redesign is to better support all of the users and make a more robust network to support Internet and Web enabled access. The redesign includes full site redundancy and better firewall protection. The design will implement the Hot Standby Router Protocol (HSRP) to provide automated rollover of network services should a failure occur.   Figure 2 - Proposed LAN Redundancy with Security depicted on page 5 provides an example of the proposed upgrades to the DHMH headquarter LAN.
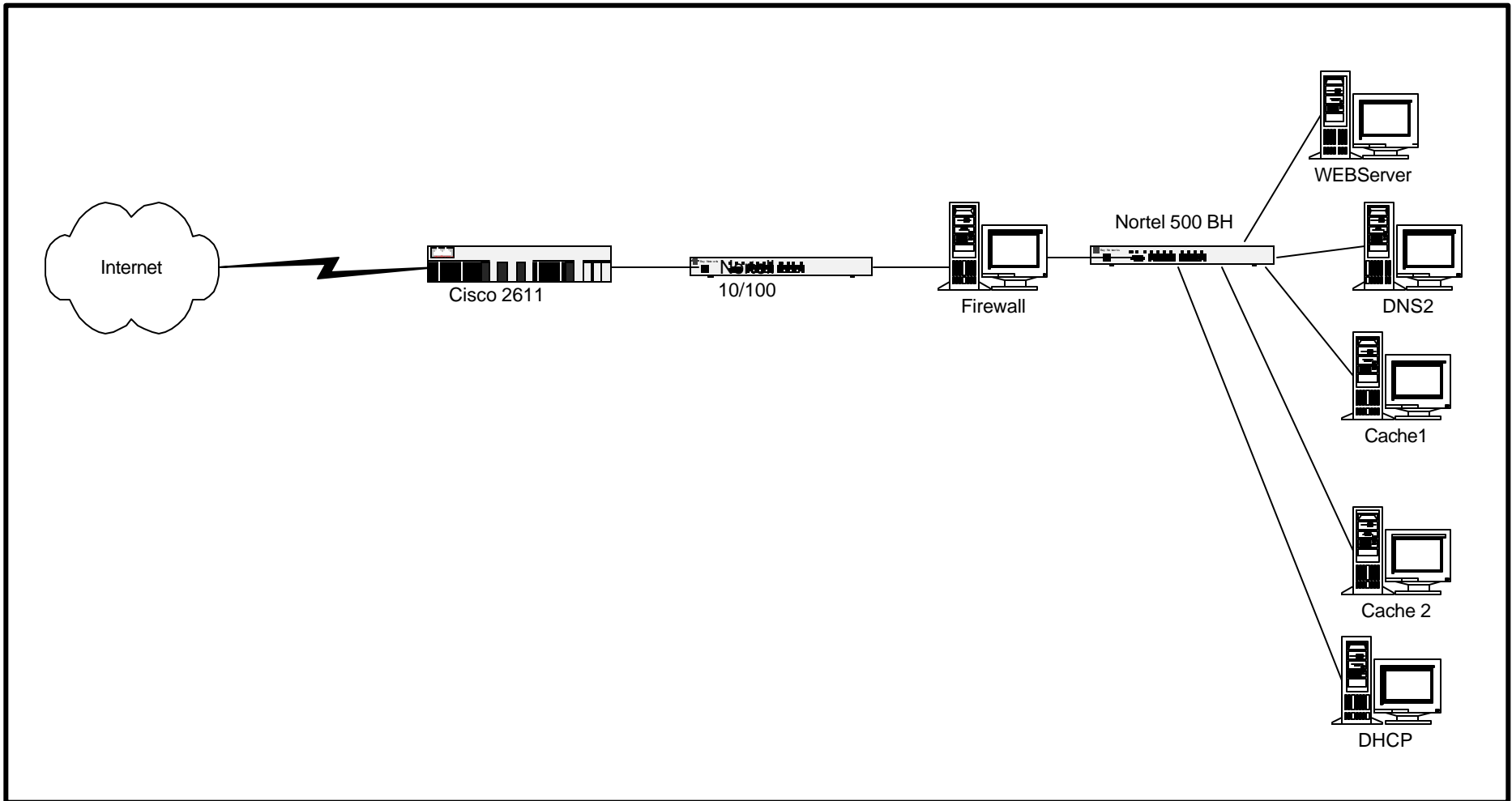
Figure 1 LAN Flat Network Example

Internet

Cisco 2611

10/100

Firewall

Nortel 500 BH

WEBServer

DNS2

Cache1

Cache 2

DHCP

Figure 2 Proposed LAN Redundancy with Security

Local Distribution

DIGEX

DIGEX/T1/Email

DSL

Internet

ATM 4MIP

Cisco 7000

Distribution Switch

Switch/Hub

Firewall

HSRP

Archives

WEBServer

DNS1

DIGEX/T1/Email

Cisco 7000

Distribution Switch

Switch/Hub

DNS2

LEC

Firewall

Cache1

Cache 2

DHCP

Local Distribution

Cache1

Cache 2

DHCP
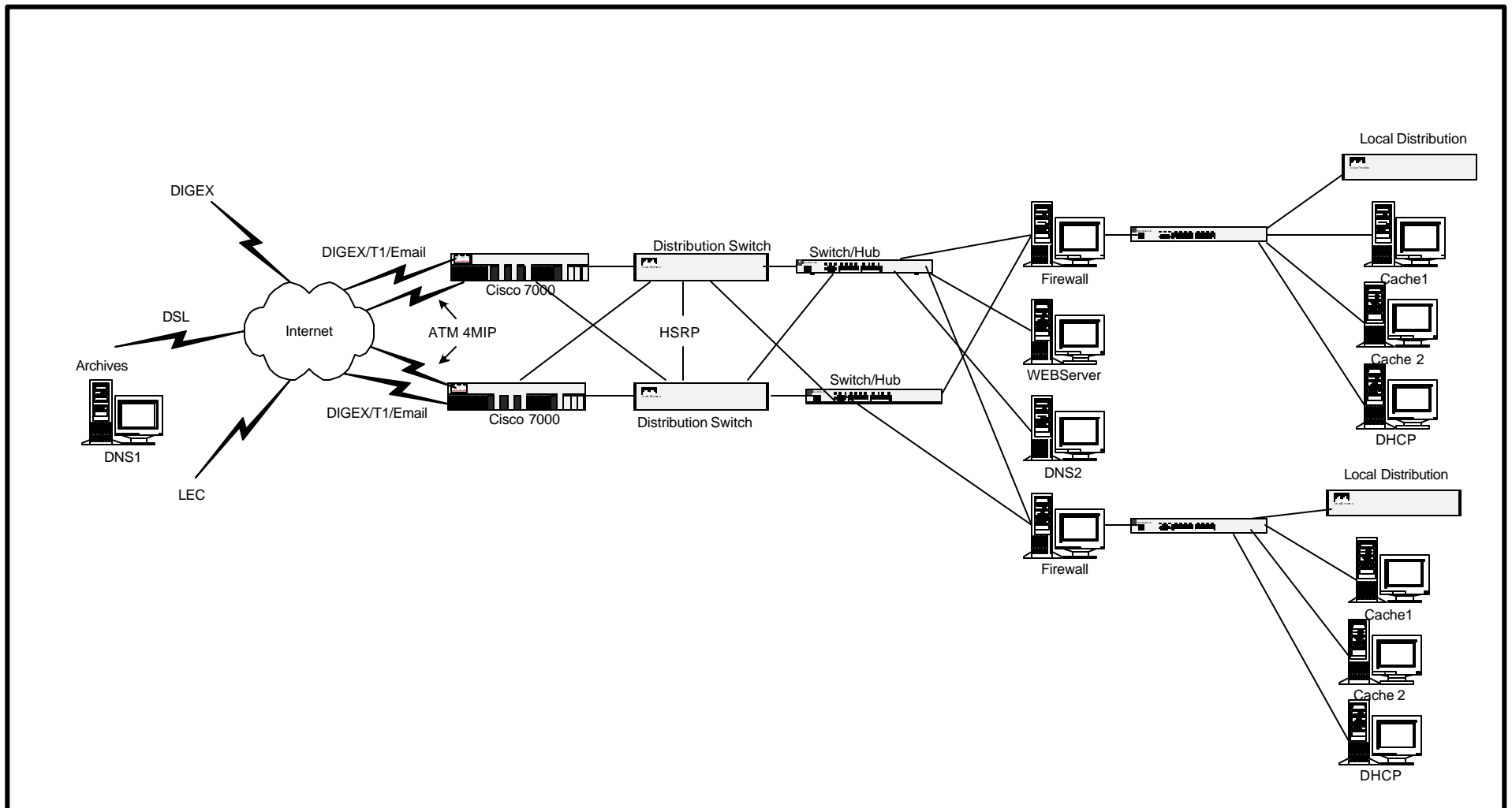
1.5 DHMH WAN

The DHMH Wide Area Network is comprised of a combination of 47 T1 and 56K Frame Relay circuits directly connected between each of the remote facilities to the DHMH Headquarters location in Baltimore via Frame-Relay. The following table lists the facilities and the WAN circuit installed at that facility:

LATA	Description
Western - Hagerstown	
Bell Atlantic NNI	1.534Mbps circuit to AT&T's POP in Western Maryland
AT&T POP	1.534Mbps circuit connecting Hagerstown to Baltimore
LHDs	
Garrett County	Local 56Kbps Frame Relay circuit
Allegany County	Local 1.54Mbps Frame Relay circuit
Washington County	Local 1.54Mbps Frame Relay circuit
Frederick County	Local 56Kbps Frame Relay circuit
DDA Regional Office	
Western Regional Office	Located on the grounds of Potomac Center
State Hospital Centers	
Brandenburg Center	Connected by fiber to Thomas B. Finan Center
Thomas B. Finan Hospital Center	Local 1.54Mbps Frame Relay circuit
Potomac Center	Local 1.54Mbps Frame Relay circuit
Western Maryland Center	Local 1.54Mbps Frame Relay circuit
Office of Food Protection	Local 56Kbps Frame Relay circuit
Eastern - Salisbury	
Bell Atlantic NNI	1.534Mbps circuit to AT&T's POP in Eastern Maryland
AT&T POP	1.534Mbps circuit connecting Salisbury to Baltimore
LHDs	
Somerset County	Local 56Kbps Frame Relay circuit
Worcester County	Local 56Kbps Frame Relay circuit
Wicomico County	Local 56Kbps Frame Relay circuit
Queen Annes County	Local 56Kbps Frame Relay circuit
Dorchester County	Local 56Kbps Frame Relay circuit
Talbot County	Local 56Kbps Frame Relay circuit
Kent County	1.54 Mbps Frame Relay circuit
Caroline County	Local 56Kbps Frame Relay circuit
DDA Regional Office	
Eastern Regional	Local 56Kbps Frame Relay circuit
State Hospital Centers	
Holly Center	Local 56Kbps Frame Relay circuit
Deer's Head Center	Local 56Kbps Frame Relay circuit
Eastern Shore Hospital Center	Local 56Kbps Frame Relay circuit
Upper Shore Community Mental Health Center	Local 56Kbps Frame Relay circuit
Washington - Silver Springs	
Bell Atlantic NNI	1.534Mbps circuit to AT&T's POP in Southern Maryland
AT&T POP	1.534Mbps circuit connecting Washington to Baltimore

LHDs	
Charles County	Local 1.54Mbps Frame Relay circuit
Prince George's	2 1.54 Mbps PVCs
St. Mary's County	Local 56Kbps Frame Relay circuit
Montgomery County	Local 56Kbps Frame Relay circuit
DDA Regional Office	
Southern Regional	Local 56Kbps Frame Relay circuit
State Hospital Centers	
RICA-Montgomery	Local 54kps Frame Relay circuit
RICA-Southern	Local 54kps Frame Relay circuit
Baltimore - Downtown	
Bell Atlantic NNI - West	1.534Mbps circuit to AT&T's POP in Baltimore
Bell Atlantic NNI - East	1.534Mbps circuit to AT&T's POP in Baltimore
Bell Atlantic NNI - Wash.	1.534Mbps circuit to AT&T's POP in Baltimore
LHDs	
Baltimore County	1.54Mbps PVC
Baltimore City	Local 56Kbps Frame Relay circuit
Calvert County	Local 56Kbps Frame Relay circuit
Anne Arundel County	Local 56Kbps Frame Relay circuit
Howard County	Local 56Kbps Frame Relay circuit
Carroll County	Local 1.54Mbps Frame Relay circuit
Cecil County	Local 56Kbps Frame Relay circuit
Harford County	Local 56Kbps Frame Relay circuit
Central Headquarters - 201 W. Preston St.	
Bell Atlantic T-3	Local 22Mbps Frame Relay circuit
Bell Atlantic PRI(2)	Local PRI for Remote Access
Bell Atlantic T-1	Local 1.54Mbs Frame Relay circuit for internet connectivity
Bell Atlantic T-1	Local 1.54Mbs Frame Relay circuit for intranet connectivity
Bell Atlantic BRI(3)	For Video Conferencing
Remote Headquarters	
Metro Building	Local 1.54Mbps Frame Relay circuit
	Local 1.54Mbs Frame Relay circuit for internet connectivity
500 N. Calvert Street	Local 1.54Mbps Frame Relay circuit
6 St. Paul Street	Local 1.54Mbps Frame Relay circuit
Reisterstown Road Plaza	Local 1.54Mbps Frame Relay circuit
OCME	Local 1.54Mbps Frame Relay circuit
Treasury Building, Annapolis	Local 56Kbps Frame Relay circuit
State Hospital Centers	
Spring Grove Hospital Center	Local 1.54Mbps Frame Relay circuit
Rosewood Center	Local 1.54Mbps Frame Relay circuit
Springfield Hospital Center	Local 56Kbps Frame Relay circuit
Clifton T. Perkins Hospital Center	Local 56Kbps Frame Relay circuit
Crownsville Hospital Center	Local 56Kbps Frame Relay circuit
RICA-Baltimore	Local 56Kbps Frame Relay circuit
Walter P. Carter Mental Health Center	Local 56Kbps Frame Relay circuit
DDA Regional Office	
Central Regional Office	On the grounds of Rosewood Center

The following diagram depicts the cross-LATA connectivity and provides a listing of each facility and the LATA where it is located. It is the responsibility of the DHMH IT staff to support each of these circuits. To better support each of these facilities the DHMH IT staff will

upgrade the Local 56Kbps Frame Relay circuits with T1 Frame relay circuits. The following table lists the facilities and the WAN circuits that will be installed after the upgrade:

LATA	Description
Western - Hagerstown	
Bell Atlantic NNI	1.534Mbps circuit to AT&T's POP in Western Maryland
AT&T POP	1.534Mbps circuit connecting Hagerstown to Baltimore
LHDs	
Garrett County	Local 1.54Mbps Frame Relay circuit
Allegany County	Local 1.54Mbps Frame Relay circuit
Washington County	Local 1.54Mbps Frame Relay circuit
Frederick County	Local 1.54Mbps Frame Relay circuit
DDA Regional Office	
Western Regional Office	Located on the grounds of Potomac Center
State Hospital Centers	
Brandenberg Center	Connected by fiber to Thomas B. Finan Center
Thomas B. Finan Hospital Center	Local 1.54Mbps Frame Relay circuit
Potomac Center	Local 1.54Mbps Frame Relay circuit
Western Maryland Center	Local 1.54Mbps Frame Relay circuit
Office of Food Protection	Local 1.54Mbps Frame Relay circuit
Eastern - Salisbury	
Bell Atlantic NNI	1.534Mbps circuit to AT&T's POP in Eastern Maryland
AT&T POP	1.534Mbps circuit connecting Salisbury to Baltimore
LHDs	
Somerset County	Local 1.54Mbps Frame Relay circuit
Worcester County	Local 1.54Mbps Frame Relay circuit
Wicomico County	Local 1.54Mbps Frame Relay circuit
Queen Annes County	Local 1.54Mbps Frame Relay circuit
Dorchester County	Local 1.54Mbps Frame Relay circuit
Talbot County	Local 1.54Mbps Frame Relay circuit
Kent County	Local 1.54 Mbps Frame Relay circuit
Caroline County	Local 1.54Mbps Frame Relay circuit
DDA Regional Office	
Eastern Regional	Local 1.54Mbps Frame Relay circuit
State Hospital Centers	
Holly Center	Local 1.54Mbps Frame Relay circuit
Deers Head Center	Local 1.54Mbps Frame Relay circuit
Eastern Shore Hospital Center	Local 1.54Mbps Frame Relay circuit
Upper Shore Community Mental Health Center	Local 1.54Mbps Frame Relay circuit
Washington - Silver Springs	
Bell Atlantic NNI	1.534Mbps circuit to AT&T's POP in Southern Maryland
AT&T POP	1.534Mbps circuit connecting Washington to Baltimore
LHDs	
Charles County	Local 1.54Mbps Frame Relay circuit
Prince George's	2 1.54 Mbps PVCs
St. Mary's County	Local 1.54Mbps Frame Relay circuit
Montgomery County	Local 1.54Mbps Frame Relay circuit

DDA Regional Office	
Southern Regional	Local 1.54Mbps Frame Relay circuit
State Hospital Centers	
RICA-Montgomery	Local 1.54Mbps Frame Relay circuit
RICA-Southern	Local 1.54Mbps Frame Relay circuit
Baltimore - Downtown	
Bell Atlantic NNI - West	1.534Mbps circuit to AT&T's POP in Baltimore
Bell Atlantic NNI - East	1.534Mbps circuit to AT&T's POP in Baltimore
Bell Atlantic NNI - Wash.	1.534Mbps circuit to AT&T's POP in Baltimore
LHDs	
Baltimore County	1.54Mbps PVC
Baltimore City	Local 1.54Mbps Frame Relay circuit
Calvert County	Local 1.54Mbps Frame Relay circuit
Anne Arundel County	Local 1.54Mbps Frame Relay circuit
Howard County	Local 1.54Mbps Frame Relay circuit
Carroll County	Local 1.54Mbps Frame Relay circuit
Cecil County	Local 1.54Mbps Frame Relay circuit
Harford County	Local 1.54Mbps Frame Relay circuit
Central Headquarters - 201 W. Preston St.	
Bell Atlantic T-3	Local 22Mbps Frame Relay circuit
Bell Atlantic PRI(2)	Local PRI for Remote Access
Bell Atlantic T-1	Local 1.54Mbs Frame Relay circuit for internet connectivity
Bell Atlantic T-1	Local 1.54Mbs Frame Relay circuit for intranet connectivity
Bell Atlantic BRI(3)	For Video Conferencing
Remote Headquarters	
Metro Building	Local 1.54Mbps Frame Relay circuit
	Local 1.54Mbs Frame Relay circuit for internet connectivity
500 N. Calvert Street	Local 1.54Mbps Frame Relay circuit
6 St. Paul Street	Local 1.54Mbps Frame Relay circuit
Reisterstown Road Plaza	Local 1.54Mbps Frame Relay circuit
OCME	Local 1.54Mbps Frame Relay circuit
Treasury Building, Annapolis	Local 1.54Mbps Frame Relay circuit
State Hospital Centers	
Spring Grove Hospital Center	Local 1.54Mbps Frame Relay circuit
Rosewood Center	Local 1.54Mbps Frame Relay circuit
Springfield Hospital Center	Local 1.54Mbps Frame Relay circuit
Clifton T. Perkins Hospital Center	Local 1.54Mbps Frame Relay circuit
Crownsville Hospital Center	Local 1.54Mbps Frame Relay circuit
RICA-Baltimore	Local 1.54Mbps Frame Relay circuit
Walter P. Carter Mental Health Center	Local 1.54Mbps Frame Relay circuit
DDA Regional Office	
Central Regional Office	On the grounds of Rosewood Center

Brandenberg Center
Thomas B. Finan Hospital Center
Potomic Center
Western Maryland Center
Office of Food Protection

Metro Building
500 N. Calvert
6 St. Paul Street
Reistertown Road Plaza
OCME
Treasury Building, Annapolis

Baltimore County
Baltimore City
Calvert County
Anne Arundel County
Howard County
Carroll County
Cecil County
Hartford County

Spring Grove Hospital Center
Rosewood Center
Springfield Hospital Center
Clifton T. Perkins Hopital Center
Crownsville Hospital Center
RICA- Baltimore
Walter P. Carter Mental Health Center

Verizon ATT

Central Regional Office

Western Regional Office

Garrett County
Allegany County
Washington County
Fredrick County

ATT Verizon

RICA- Montgomery
RICA- Southern

ATT Verizon

Somerset County
Worcester County
Wicomico County
Queen Annes County
Dorchester County
Talbot County
Kent County
Caroline County

Southern Regional

Charles County
Prince George's County
St. Mary's County
Montgomery County

- - - - - **LATA Boundry**

Baltimore

West

East

Washington

ATT Verizon

Eastern Regional

4 Local Area Transport Areas (LATA)

Holly Center
Deers Head Center
Eastern Shore Hospital Center
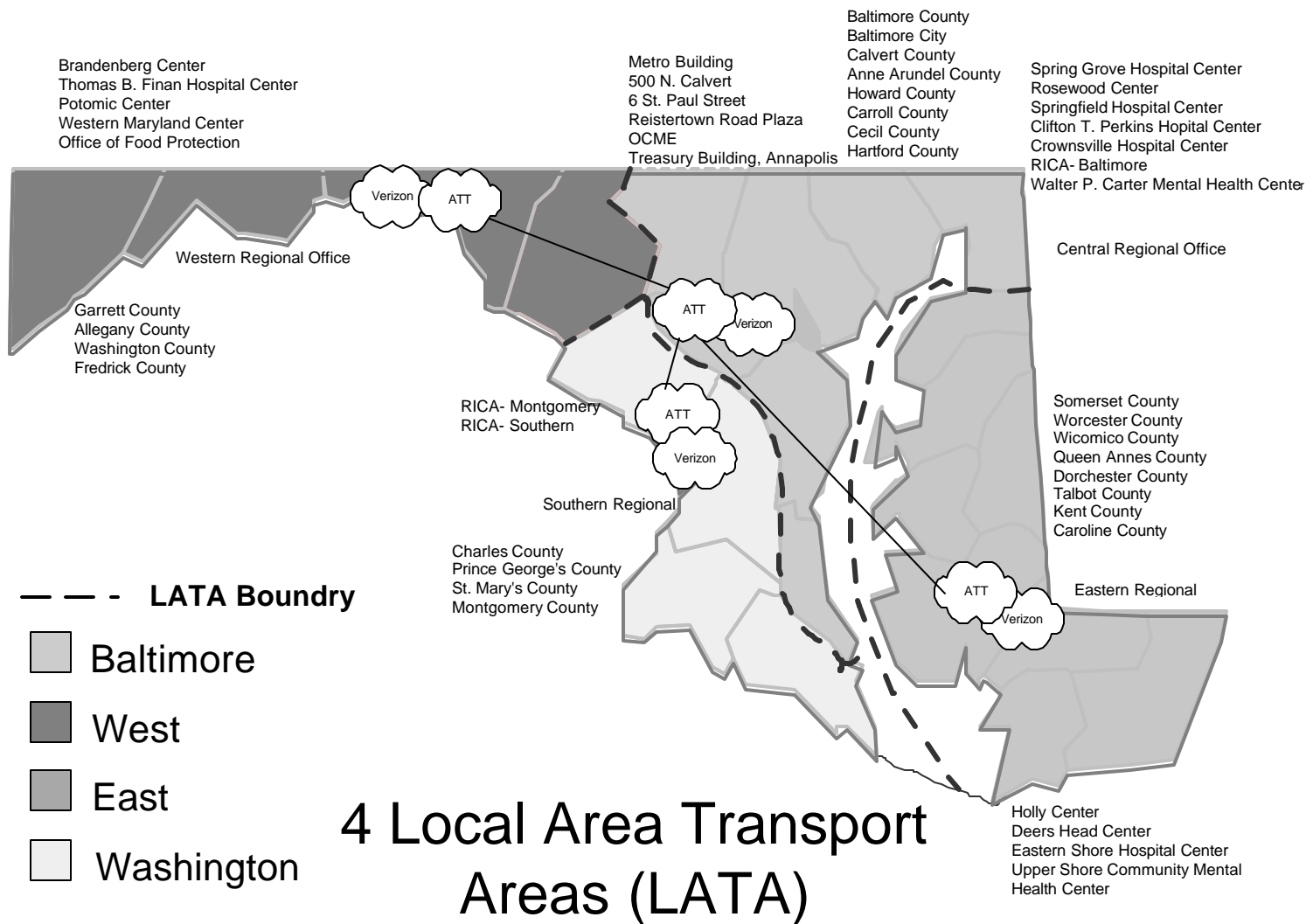Upper Shore Community Mental Health Center

Figure 3 Cross LATA Connectivity

The circuits listed in the previous tables and depicted in the diagram above are shown in the following graphs. These graphs provide a percent breakout of the broadband circuits per type of circuit supported by the DHMH IT staff currently and after the upgrade.
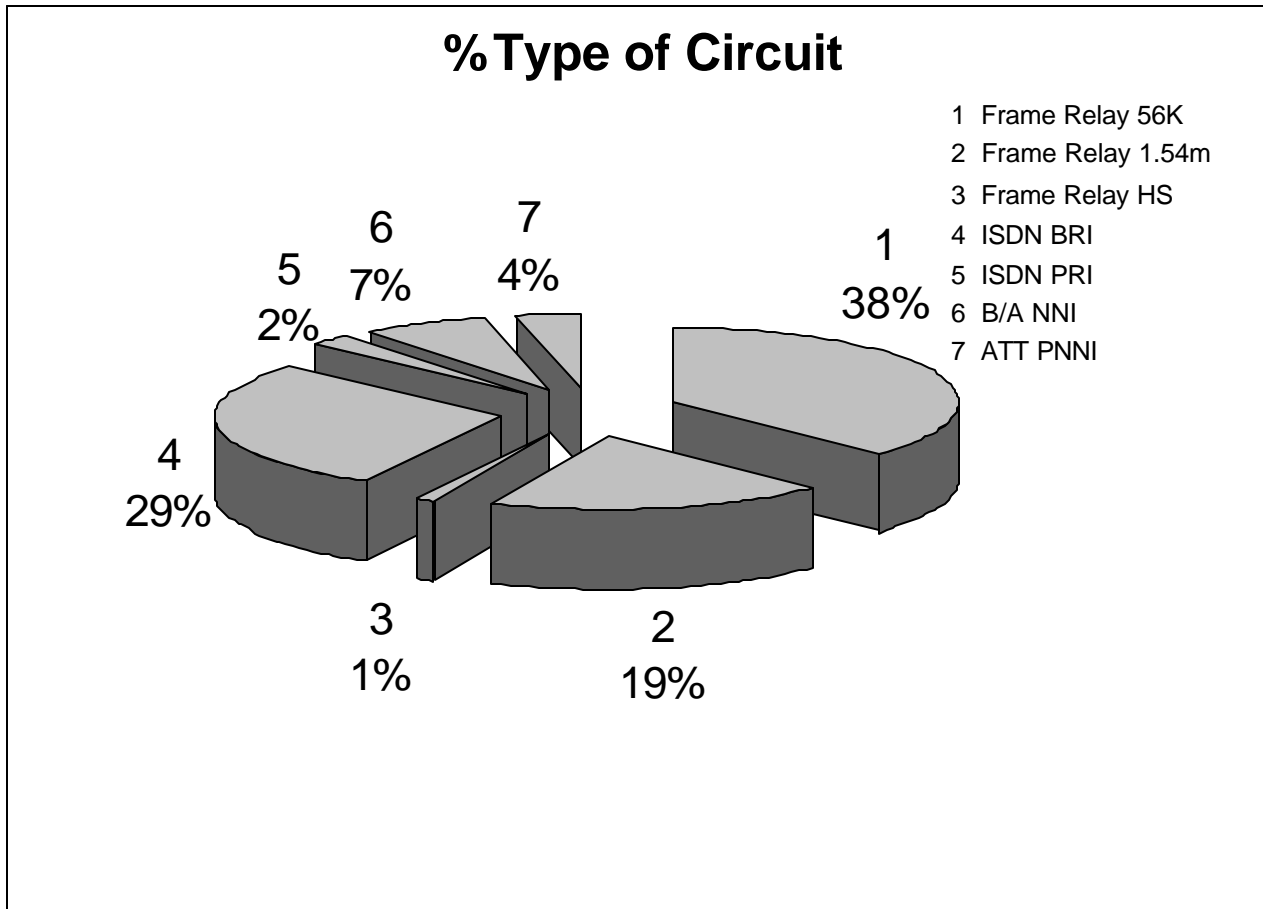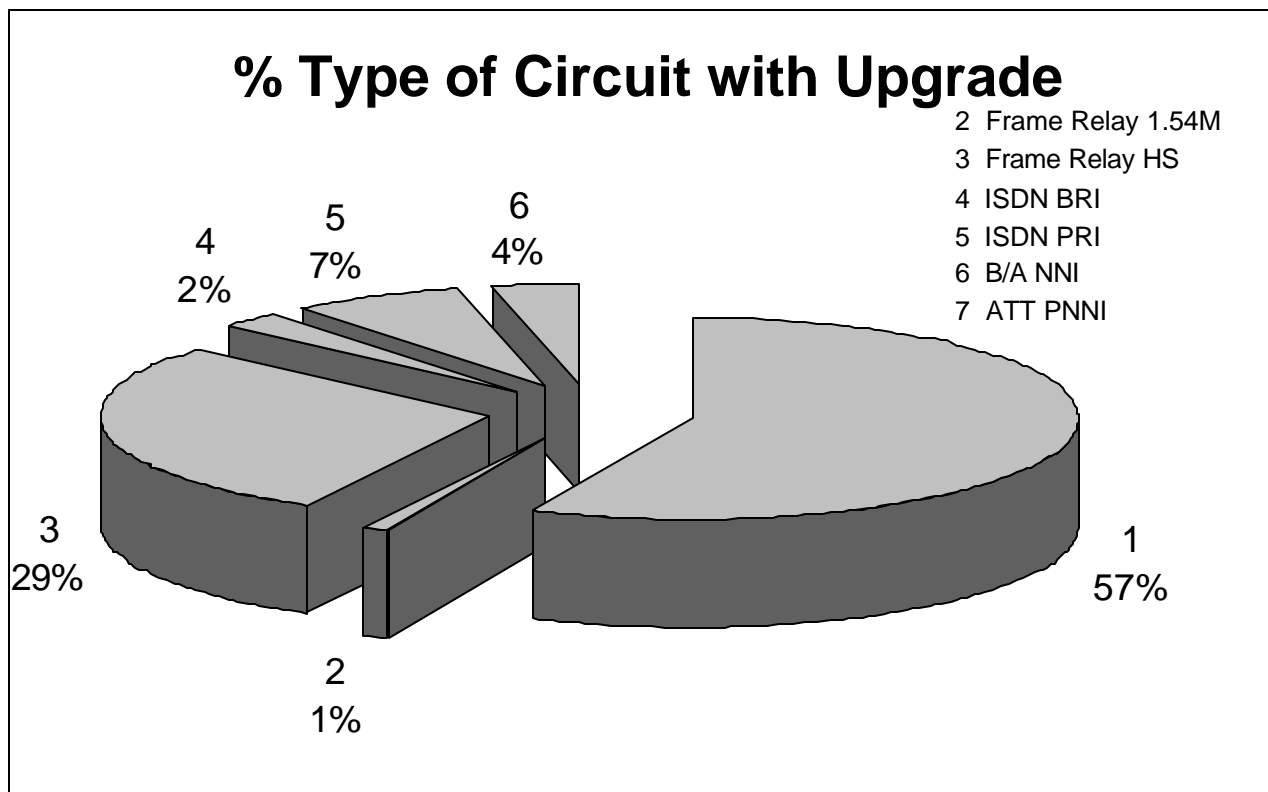
%Type of Circuit

1 Frame Relay 56K
2 Frame Relay 1.54m
3 Frame Relay HS
4 ISDN BRI
5 ISDN PRI
6 B/A NNI
7 ATT PNNI

6 7%
7 4%
5 2%
1 38%
4 29%
3 1%
2 19%

Figure 4 Current WAN Circuit Graph

% Type of Circuit with Upgrade

2 Frame Relay 1.54M
3 Frame Relay HS
4 ISDN BRI
5 ISDN PRI
6 B/A NNI
7 ATT PNNI

4
2%

5
7%

6
4%

3
29%

2
1%

1
57%

Figure 5 WAN Circuit Upgrade Graph

2 State Network Background

The State of Maryland is in the process of implementing a "High Speed" network that will provide a statewide backbone reaching to each county in the state. The High-Speed network will connect existing networks into one common, larger network to provide a seamless communications environment. The High-Speed network i.e. net.work.Maryland will provide the critical fiber and telecommunications infrastructure to help eliminate the need for individual broadband networks including cross-LATA circuits. The network will consist of a combination of fiber optics and the use of the current carriers i.e. Verizon, ATT, and MCI infrastructures. The current network design will use state of the art technology and provide a full range of services and access to agencies, facilities, and business. Some of the services to be supported include collaboration, video teleconferencing, distance learning, and tele-medicine.
In the case of DHMH the State objective is to support patients and doctors with a robust network that provides access to information and institutions from all areas of Maryland. Based on the objectives developed by the State and those listed in this plan, when the High Speed network becomes a reality it may provide a means for DHMH to reduce telecommunications cost while increasing services to its users, the community and related businesses.

2.1 System security and data confidentiality

Security and confidentiality must be taken into consideration as systems are shared and access to information becomes more open. Therefore, security policies should continue to be defined, refined and strictly enforced. The growth of the Internet and the drive to Web-based applications

and remote access makes the development of policies and standards for outside access, information provision and staff use of the Internet and Inter-Agency networks a critical issue. DHMH must make certain that its systems continue to be protected against malicious users and software viruses as well as provide access to secure data without threat to the systems and the data. The DHMH security must also protect the public by restricting access to the data through strong encryption and authentication processes.

2.2 Flexible standards and policies to assure accessibility

Equipment and design will meet standards for data accessibility and network compatibility, driving toward a seamless communications network across the state.

3 Strategic Plan for Telecommunications

This plan will take into consideration the background information provided in Section 1 and 2 of this document. DHMH will evaluate the current telecommunications infrastructure and develop a process to support the objectives and goals listed below. The DHMH IT staff is committed to providing the most complete package of services to support the administrations and the community.

3.1 Statewide Strategy for Technology

The State of Maryland Executive Branch is currently in the process of developing an Information Technology Master Plan to define the overall goals and objectives for Maryland. Policies and procedures will be defined to assure all Agencies and Departments within the Executive Branch of Maryland State Government IT infrastructure is consistent.

The following objectives have been provided as guidance:

- Assure automated, cost-effective, easily accessible and convenient delivery and information and service to Maryland's citizen's businesses, and public sector partners
- Promote interoperability of the State's systems, including collaboration and sharing of information technology resources (data, equipment, systems, and networks);
- Achieve economies of scale through system consolidation and integration; and,
- Maintain the integrity and security of data within the State' stewardship responsibilities

3.2 DHMH Strategy for Technology

The DBM guidelines were considered when developing the DHMH goals and objectives. Based on those guidelines and the needs of the DHMH community the following objectives have been defined

- Develop a robust interoperable infrastructure that will meet the current needs of the community and support emerging technologies, while having the ability to migrate to the statewide networks in the long term.
- Insure full Internet access to support Web-Enabled applications, better public and private access to data, automation of services, and remote access.
- Implement network measurement and management tools to evaluate, maintain, and update the telecommunications infrastructure in the most timely and cost effective manner.

The DHMH objectives are based on both short term and long term actions that must be accomplished to best support the users. In the short term DHMH will implement a more robust agency network that will improve the overall quality of service and high-speed access both Intra-LATA and Cross-LATA. These improvements will include upgrading the WAN circuits to support voice, video and data. Implementing ATM for the Cross-LATA connectivity will be the first phase of DHMH implementing a switched network that will better support video teleconferencing, distance learning, and tele-medicine. Integrating ATM is the first phase to improving cross-LATA and later inter-agency communications. By implementing a switched network, DHMH can support emerging technologies, legacy systems, and be better positioned for disaster recovery efforts. In the long term DHMH will integrate the DHMH network into the Statewide high speed network when access is available.

3.3   *Objective 1 – Update the Telecommunications Infrastructure*

To better support the users and be prepared for new and more demanding requirements DHMH must develop a robust interoperable telecommunications infrastructure that will meet the current needs of the community while having the ability support new requirements in an efficient and timely manner. With user demands increasing and the need for voice, video, and data services combined users are putting more and more demands on the telecommunications infrastructure. Additionally, there is a driving requirement for Inter-State and Inter-Agency sharing of data and collaboration of the telecommunications infrastructure. Therefore, the DHMH telecommunications infrastructure will be designed and implemented to support the need for a seamless, robust, state-of-the-art network that is emerging. In the short term DHMH will determine the best approach to supporting its users and implement new technology that will support the users demands. The DHMH telecommunications infrastructure will be designed to provide the most efficient and cost effective services.

Goal
Increased network bandwidth.

Actions:
Perform a site analysis to determine each site's current and future bandwidth requirements. Evaluate the requirements and determine how best to support the sites.

Upgrade circuits at facilities that are currently experiencing saturation of their committed information rate (CIR).

Develop a plan and migrate the current IPX networks to IP.

Goal
Improve architecture to provide additional services currently not provided via the DHMH network.

Actions
Perform a product and technology evaluation to determine best approach to providing a robust network to support services such as video teleconferencing, distance learning, and tele-medicine.

Integrate new equipment that will support emerging technologies including ATM, MPLS, DWDM, Gigabit Ethernet, Sonet, etc.

Evaluate the pros and cons of migrating the broadband infrastructure to ATM in the short term to provide a more robust infrastructure that will provide better services for video teleconferencing, distance learning, and tele-medicine.

Determine areas and facilities that will be best suited to use these services in the near future.

Purchase required equipment, upgrade circuits and implement new technology.

Goal
Improve data access via redundancy for stable end-to-end reliability

Actions
Design and implement a fully redundant system within the DHMH headquarter facility to guarantee user access to applications and data within DHMH.

Perform a full LAN/WAN analysis and design process to determine the most efficient and cost effective manner to develop full LAN/WAN redundancy

Evaluate the use of the states' high-speed network, the Internet/VPN technology and other alternatives for additional cost effective redundancy.

3.4   Objective 2 - Public and Private access and Public outreach

The State of Maryland is focused on utilizing technology to provide public and private access to data. One initiative for the State of Maryland is all State agencies must have services to citizens 80% Web Enabled by the year 2002. To succeed in this effort the telecommunications infrastructure must be improved to provide access to data with a fault tolerant solution so that access is continuous. Additionally, the Internet is quickly becoming the de facto standard for providing user access for remote and mobile users and helps to reduce cost for telecommunications. To utilize the Internet it is essential to develop a telecommunications infrastructure that is secure and provides easy, effective user access when needed. Security plays a critical role in data access and will continue to be emphasized in all aspects of the design and modifications planned for the DHMH networks. The requirements for security currently include Internet access and protections of data and systems. In the future security must also take into consideration specific user access over an open architecture. As technology for Digital Signatures and Public Key Infrastructure (PKI) becomes more widely accepted and used, DHMH telecommunications security features will be positioned to support these various technologies and requirements.

Goal
Maintain full network security at all DHMH sites to support Internet Access, Web Enabled applications, Remote Access and Telecommuting.

Actions

Evaluate emerging firewall products and determine the best solution for DHMH.

Implement a security system that supports encryption and authentication and prevents malicious attacks on the systems and data.

Maintain implementation and configuration of firewalls to support filtering and secure all data transfer and data access on the Internet and Inter-Agency networks.

Goal
Implement emerging security technologies to utilize the Internet to protect the integrity of DHMH networks.

Actions
Develop an infrastructure that will utilize emerging Internet technology such as secure VPNs to provide additional access from remote and small office locations that are not inherently on the DHMH or State infrastructure. Integrate equipment to allow for secure access to the DHMH network for users who travel, telecommute or otherwise require access outside of the DHMH facilities; including kiosks, and access to automated services.

3.5   *Objective 3 - Performance Measurements and Network Management*

To best support the DHMH administrations the network should be monitored for performance. To fully support and maintain the network it is essential to maintain a thorough working knowledge of the network at all times. In addition to monitoring, network management and configuration management controls must be implemented. As the network infrastructure grows, an up to date and accurate knowledge base of the network is essential. An up to date and user-friendly network management system provides a means to pro-actively and more efficiently perform upgrades, modifications, and repairs as well as design changes.

Goal
Develop a Network Management and Monitoring System to provide tools that will assist the DHMH IT staff better support the users and more effectively plan and implement changes.

Actions
Define the requirements of the system and evaluate network monitoring and management applications to determine the best commercial off-the-shelf product (s) to meet the requirements.
Install and implement the network management tools and start the monitoring process to get a real-time understanding of the networks usage and areas of concern.

Goal
Document, manage, and monitor the DHMH circuits, equipment, and usage to provide educated pro-active support and upgrades on the telecommunications infrastructure.

Actions

Survey all sites and document all equipment, including serial number, configuration data, date of purchase, maintenance agreements, location, points of contact, etc.

Develop a database using the information gathered and integrate the database with the Network Management application so that an up to date and accurate account of equipment and its status can be maintained.

Integrate the network management application into the telecommunications infrastructure to provide easy access by the IT staff for updates and maintenance.

Goal

Implement Configuration Control to support network management and maintain integrity of the DHMH systems.

Actions

Establish criteria for configuration control to retain up to date and accurate accounting of all maintenance, upgrades, and design modifications.

Develop system procedures and guidelines to guarantee the information is continually maintained.